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Attorney Docket No. 1000.2A10

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims

Claim 1-56 (canceled).

Claim 57 (currently amended): A computer program ~~readable-medium~~ comprising ~~computer-executable instructions~~ for performing a method for acquiring data from a polymer array using an array scanner comprising:

scanning ~~an area of a substrate having~~ a plurality of ~~different~~ diverse polymers of known sequence which form a polymer array that is located on a substrate,

wherein each type of diverse polymer has a different sequence and is on a localized area that is smaller than ~~250000~~  $2.5 \times 10^5$  microns<sup>2</sup>;

receiving pixel data of the polymer array from the scanner; and

collecting pixel data of the polymer array; and

generating an average intensity for a given localized area.

Claim 58 (currently amended): The computer program ~~readable-medium~~ of Claim 57 wherein the method further comprises issuing commands to move a scan stage.

Claim 59 (currently amended): The computer program ~~readable-medium~~ of Claim 57 wherein the method further comprises outputting the pixel data to an image data file and displaying the image data.

Claim 60 (currently amended): The computer program ~~readable-medium~~ of Claim 57 wherein the polymers are nucleic acids and the substrate is hybridized with a sample.

Claim 61 (currently amended): The computer program ~~readable-medium~~ of Claim 60 57 wherein the polymers are peptides.

Claim 62 (currently amended): The computer program ~~readable-medium~~ of Claim 57 wherein the substrate has at least 400 polymers per cm<sup>2</sup>.

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Claim 63 (currently amended): The computer program ~~readable-medium~~ of Claim 57 wherein the substrate has at least 1000 polymers per  $\text{cm}^2$ .

Claim 64 (currently amended): The computer program ~~readable-medium~~ of Claim 57 wherein the substrate has at least 10000 polymers per  $\text{cm}^2$ .

Claim 65 (currently amended): A ~~computer~~ Computer software product comprising:  
computer-program software code that scans ~~an area of a substrate~~ having a plurality of different diverse polymers of known sequence which form an array that is located on a substrate, wherein each ~~type of diverse~~ polymer has a different sequence and is on a localized area ~~areas~~ that is smaller than ~~250000~~  $2.5 \times 10^5$  microns<sup>2</sup>;  
computer-program software code that receives pixel data of the polymer array from the scanner;  
computer-program software code that collects pixel data of the polymer array ;  
computer-program code ~~that generates an average intensity for a given localized area;~~  
and  
a computer-readable medium for storing the codes .

Claim 66 (currently amended): The computer software ~~product~~ of Claim 65 further comprising computer-program software code that issues commands to move a scan stage.

Claim 67 (currently amended): The computer software ~~product~~ of Claim 66 further comprising computer-program software code that outputs the pixel data to an image data file and displays the image data.

Claim 68 (currently amended): The computer software ~~product~~ of Claim 65 wherein the polymers are nucleic acids and the substrate is hybridized with a sample.

Claim 69 (currently amended): The computer software ~~product~~ of Claim 65 wherein the polymers are peptides.

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Claim 70 (currently amended): The computer software ~~product~~ of Claim 65 wherein the substrate has at least 400 polymers per  $\text{cm}^2$ .

Claim 71 (currently amended): The computer software ~~product~~ of Claim 65 wherein the substrate has at least 1000 polymers per  $\text{cm}^2$ .

Claim 72 (currently amended): The computer software ~~product~~ of Claim 65 wherein the substrate has at least 10000 polymers per  $\text{cm}^2$ .

Claim 73 (currently amended): A system for acquiring data from an array of diverse polymer sequences using a polymer scanner comprising:

~~a processor; and a memory being coupled to the processor, the memory storing a plurality of machine instructions that cause the processor to perform a computer containing a program that implements~~ a plurality of logical steps when implemented by the processor, the logical steps comprising:

~~scanning an area of a substrate having a plurality of different diverse polymers of known sequence which form an array that is located on a region of a substrate, wherein each type of diverse polymer has a different sequence and is on a localized area that is smaller than 250000  $2.5 \times 10^5$  microns<sup>2</sup>;~~

~~receiving pixel data of the polymer array from the scanner; and~~

~~collecting pixel data of the polymer array; and~~

~~generating an average intensity for a given localized area.~~

Claim 74 (currently amended): The system of Claim 73 wherein the logical steps further ~~comprises~~ comprise issuing commands to move a scan stage.

Claim 75 (currently amended): The system of Claim 74 wherein the logical steps further ~~comprises~~ comprise outputting the pixel data to an image data file and displaying the image data.

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Claim 76 (previously presented): The system of Claim 75 wherein the polymers are nucleic acids and the substrate is hybridized with a sample.

Claim 77 (previously presented): The system of Claim 76 wherein the polymers are peptides.

Claim 78 (currently amended): A computer program ~~readable-medium-comprising computer-executable-instructions~~ for performing a method comprising:

scanning a plurality of diverse polymer probes of known sequence which form a polymer array to obtain a plurality of intensity data, wherein the polymer array has a plurality of ~~different~~ diverse polymer probes of known sequence on a substrate, wherein each diverse ~~type of~~ polymer probe has a different sequence and occupies a localized area that is less than 250000  $2.5 \times 10^5$  microns<sup>2</sup>, and wherein the array has been contacted with a sample that may contain a target; and

determining the positions of probe and target interaction based upon the intensity data of the polymer array; and

collecting pixel data of the polymer array and

generating an average intensity for a given localized area.

Claim 79 (currently amended): The computer program ~~readable-medium~~ of Claim 78 wherein the polymer probes are nucleic acids.

Claim 80 (currently amended): The computer program ~~readable-medium~~ of Claim 78 wherein the polymer probes are oligonucleotides.

Claim 81 (currently amended): The computer program ~~readable-medium~~ of Claim 80 wherein the intensity data reflects the hybridization of the oligonucleotide probes and the target.

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Claim 82 (currently amended): The computer program ~~readable-medium~~ of Claim 78 further comprising generating an average intensity based on ~~wherein intensity data are~~ fluorescence ~~fluorescence~~ data.

Claim 83 (currently amended): The computer program ~~readable-medium~~ of Claim 78 wherein the substrate has at least 400 polymer probes per  $\text{cm}^2$ .

Claim 84 (currently amended): The computer program ~~readable-medium~~ of Claim 78 wherein the substrate has at least 1000 polymer probes per  $\text{cm}^2$ .

Claim 85 (currently amended): The computer program ~~readable-medium~~ of Claim 78 wherein the substrate has at least 10000 polymer probes per  $\text{cm}^2$ .

Claim 86 (currently amended): Computer A-computer software product comprising:

~~computer-program software code~~ that scans a ~~polymer array to obtain a plurality~~ intensity data wherein the polymer array has a plurality of different ~~diverse~~ polymer probes; of known sequence which form an array on a substrate, wherein each ~~type of diverse~~ polymer probe has a different sequence and occupies a localized area that is less than 250000 ~~2.5 x 10<sup>5</sup>~~ microns<sup>2</sup>, and wherein the array has been contacted with a sample that may contain a target; and

~~computer-program software code~~ that determines the positions of probe and target interaction based upon the ~~intensity data and the computer program code~~ collects pixel data and generates an average intensity for a given localized area; and

~~a computer-readable medium for storing the codes.~~

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Claim 87 (currently amended): The computer software ~~product~~ of Claim 86 wherein the polymer probes are nucleic acids.

Claim 88 (currently amended): The computer software ~~product~~ of Claim 86 wherein the polymer probes are oligonucleotides.

Claim 89 (currently amended): The computer software ~~product~~ of Claim 88 wherein the intensity data reflects the hybridization of the oligonucleotide probes and the target.

Claim 90 (currently amended): The computer software ~~product~~ of Claim 86 wherein intensity data are ~~fioreseence~~ fluorescence data.

Claim 91 (currently amended): The computer software ~~product~~ of Claim 86 wherein the substrate has at least 400 polymer probes per  $\text{cm}^2$ .

Claim 92 (currently amended): The computer software ~~product~~ of Claim 86 wherein the substrate has at least 1000 polymer probes per  $\text{cm}^2$ .

Claim 93 (currently amended): The computer software ~~product~~ of Claim 86 wherein the substrate has at least 10000 polymer probes per  $\text{cm}^2$ .

Claim 94 (currently amended): A system for acquiring data from an array having diverse polymer sequences using a polymer scanner comprising:

~~a processor, and a memory being coupled to the processor, the memory storing a plurality of machine instructions that cause the processor to perform~~ a computer containing a program that implements a plurality of logical steps ~~when implemented by the processor, the logical steps comprising:~~

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~~scanning a polymer array to obtain a plurality of intensity data, wherein the polymer array has a plurality of different~~ diverse polymer probes of known sequence which form an array on a substrate, wherein each ~~type of~~ diverse polymer probe has a different sequence and occupies a localized area that is less than 250000  $2.5 \times 10^5$  microns<sup>2</sup>, and wherein the array has been contacted with a sample that may contain a target; and

determining the positions of probe and target interaction based upon fluorescent intensity data of the polymer array; and

collecting pixel data and

~~generating an average intensity for a given localized area.~~

Claim 95 (previously presented): The system of Claim 94 wherein the polymer probes are nucleic acids.

Claim 96 (previously presented): The system of Claim 95 wherein the polymer probes are oligonucleotides.

Claim 97 (previously presented): The system of Claim 96 wherein the intensity data reflects the hybridization of the oligonucleotide probes and the target.

Claim 98 (currently amended): The system of Claim 97 further comprising generating an average intensity based on wherein intensity data are ~~fluorescence~~ fluorescence data.

Claim 99 (previously presented): The system of Claim 94 wherein the substrate has at least 400 polymer probes per  $\text{cm}^2$ .

Claim 100 (previously presented): The system of Claim 94 wherein the substrate has at least 1000 polymer probes per  $\text{cm}^2$ .

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Claim 101 (previously presented): The system of Claim 94 wherein the substrate has at least 10000 polymer probes per cm<sup>2</sup>.

Claim 102 (currently amended): A system for scanning a polymer array comprising:

a scanning optical device;

a polymer array having ~~different~~ diverse polymers of known sequence on a substrate wherein each ~~type of~~ diverse polymer ~~has a different sequence and is in a localized area that is smaller than  $2.5 \times 10^5$  microns<sup>2</sup>;~~

~~a processor, and a memory being coupled to the processor, the memory storing a plurality of machine instructions that cause the processor to perform a computer containing a program that implements~~ a plurality of ~~logical steps when implemented by the processor, the logical step steps~~ comprising collecting fluorescent intensity data from less than 1/2 of each of the localized areas from the polymer array and generating an average intensity for at least one of said a given localized areas area from the polymer array.

Claim 103 (previously presented): The system of Claim 102 wherein the polymer array is a nucleic acid probe array.

Claim 104 (previously presented): The system of Claim 103 wherein the polymer array is a peptide array.

Claim 105 (previously presented): The system of Claim 104 wherein the polymer array has at least 400 polymers per cm<sup>2</sup>.

Claim 106 (previously presented): The system of Claim 105 wherein the polymer array has at least 1000 polymers per cm<sup>2</sup>.



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Claim 107 (previously presented): The system of Claim 106 wherein the polymer array has at least 10000 polymers per  $\text{cm}^2$ .

Claim 108 (currently amended): A computer program ~~readable-medium-comprising executable instructions~~ for acquiring data from a polymer array, comprising:

~~scanning a substrate having~~ a plurality of different diverse polymers; of known sequence which from an array on a substrate, wherein each type of diverse polymer is has a different sequence and is on in a localized area, ~~having an area that is smaller than 250000~~ 2.5 x 10<sup>5</sup> microns<sup>2</sup>,

acquiring data from the polymer array which indicate binding between the polymer on the substrate and a detectable target polymer; and

collecting pixel data of the polymer array; and

~~generating an average intensity for a given localized area.~~

Claim 109 (currently amended): The computer program ~~readable-medium~~ of Claim 108 wherein the target polymer is a polypeptide.

Claim 110 (currently amended): The computer program ~~readable-medium~~ of Claim 109 wherein the ~~solid~~ substrate has at least 400 probe polymers per  $\text{cm}^2$ .

Claim 111 (currently amended): The computer program ~~readable-medium~~ of Claim 110 wherein the ~~solid~~ substrate has at least 1000 probe polymers per  $\text{cm}^2$ .

Claim 112 (currently amended): The computer program ~~readable-medium~~ of Claim 111 wherein the ~~solid~~ substrate has at least 10,000 probe polymers per  $\text{cm}^2$ .

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Claim 113 (currently amended): The computer program ~~readable-medium~~ of Claim 108 wherein the target polymer is a nucleic acid.

Claim 114 (currently amended): The computer program ~~readable-medium~~ of Claim 113 wherein the solid substrate has at least 400 probe polymers per  $\text{cm}^2$ .

Claim 115 (currently amended): The computer program ~~readable-medium~~ of Claim 114 wherein the solid substrate has at least 1000 probe polymers per  $\text{cm}^2$ .

Claim 116 (currently amended): The computer program ~~readable-medium~~ of Claim 115 wherein the solid substrate has at least 10,000 probe polymers per  $\text{cm}^2$ .

Claim 117 (currently amended): The computer program ~~readable-medium~~ of Claim 108 wherein the data are fluorescence intensities.

Claim 118 (currently amended): The computer program ~~readable-medium~~ of Claim 108 wherein the substrate is an impermeable substrate having at least 1000 polymers/ $\text{cm}^2$ .

Claim 119 (currently amended): The computer program ~~readable-medium~~ of Claim 108 wherein each of the localized areas ~~known locations~~ is smaller than 1x104 ~~10,000 or 2,500~~ microns<sup>2</sup>.

Claim 120 (currently amended): A computer software ~~product~~ comprising:

~~computer program~~ software code that scans a ~~substrate~~ having a plurality of ~~different~~ diverse nucleic acids or polypeptides polymers of known sequence which form an array on a substrate, wherein each diverse nucleic acid or polypeptide has a different sequence and is on

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a at localized area areas, each of which that is an area smaller than 250000  $2.5 \times 10^5$  microns<sup>2</sup>;  
and

~~computer program software code~~ that acquires data ~~from the array~~ which indicate binding between the nucleic acid or polypeptide polymer on the substrate and a detectable target polymer and collects pixel data of the array ~~and generates an average intensity for individual localized areas; and~~

~~a computer readable medium for storing the codes .~~

Claim 121 (canceled)

Claim 122 (currently amended): The computer software ~~product~~ of Claim 121 wherein the solid substrate has at least 400 ~~probe polymers~~ nucleic acids or polypeptides per cm<sup>2</sup>.

Claim 123 (currently amended): The computer software ~~product~~ of Claim 122 wherein the solid substrate has at least 1000 ~~probe polymers~~ nucleic acids or polypeptides per cm<sup>2</sup>.

Claim 124 (currently amended): The computer software ~~product~~ of Claim 123 wherein the solid substrate has at least 10,000 ~~probe polymers~~ nucleic acids or polypeptides per cm<sup>2</sup>.

Claim 125 (currently amended): The computer software ~~product~~ of Claim 120 wherein the target ~~polymer~~ is a nucleic acid.

Claim 126 (canceled)

Claim 127 (canceled)

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Claim 128 (canceled)

Claim 129 (currently amended): The computer software product of Claim 120 wherein the data are fluorescence intensities.

Claim 130 (currently amended): The computer software product of Claim 120 wherein the substrate is an impermeable substrate having at least 1000 nucleic acids or polypeptides polymers/cm<sup>2</sup>.

Claim 131 (currently amended): The computer software product of Claim 120 wherein each of the ~~known locations~~ localized areas is smaller than 1 x 10<sup>4</sup> 10,000 or 2,500 microns<sup>2</sup>.

Claim 132 (currently amended): A computer program ~~readable medium comprising executable instructions~~ for acquiring data from a polymer nucleic acid or polypeptide array, comprising:

~~scanning a substrate having a plurality of different~~ diverse polymers nucleic acids or polypeptides of known or detectable sequence ~~at localized areas which form an array on a substrate, each diverse nucleic acid or polypeptide having a different sequence and is on each of which a localized area that is~~ are smaller than ~~250000~~ 2.5 x 10<sup>5</sup> microns<sup>2</sup>; and

acquiring data ~~from the array~~ which indicate binding between the nucleic acids or polypeptides polymer on the substrate and a detectable target polymer; and

collecting pixel data of the arrays and

generating an average intensity for a given localized area.

Claim 133 (canceled)

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Claim 134 (currently amended): The computer program ~~readable medium~~ of Claim 109 wherein the solid substrate has at least 400 ~~probe polymers~~ nucleic acids or polypeptides per  $\text{cm}^2$ .

Claim 135 (currently amended): The computer program ~~readable medium~~ of Claim 110 wherein the solid substrate has at least 1000 ~~probe polymers~~ nucleic acids or polypeptides per  $\text{cm}^2$ .

Claim 136 (currently amended): The computer program ~~readable medium~~ of Claim 111 wherein the solid substrate has at least 10,000 ~~probe polymers~~ nucleic acids or polypeptides per  $\text{cm}^2$ .

Claim 137 (canceled)

Claim 138 (canceled)

Claim 139 (canceled)

Claim 140 (canceled)

Claim 141 (currently amended): The computer program ~~readable medium~~ of Claim 108 wherein the data are fluorescence intensities.

Claim 142 (currently amended): The computer program ~~readable medium~~ of Claim 108 wherein the substrate is an impermeable substrate having at least 1000 nucleic acids or polypeptides polymers/ $\text{cm}^2$ .

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Claim 143 (currently amended): The computer program ~~readable medium~~ of Claim 108 wherein each of the ~~known locations~~ localized areas is smaller than  $1 \times 10^4$  ~~10,000 or 2,500~~ microns<sup>2</sup>.

Claim 144 (currently amended): A system for controlling a polymer scanner for a nucleic acid array comprising:

~~a processor, and a memory being coupled to the processor, the memory storing a plurality of machine instructions that cause the processor to perform a computer containing a program that implements~~ a plurality of logical steps ~~when implemented by the processor~~, the logical steps comprising:

~~scanning a substrate having a plurality of different~~ diverse nucleic acid polymers, of known or detectable sequence, ~~at localized areas on a substrate, each diverse nucleic acid polymer having a different sequence and on each of which are a localized area that is smaller than 250000~~  $1 \times 10^4$  microns<sup>2</sup>; and

~~acquiring fluorescent data from the nucleic acid array which indicate binding between the polymer~~ nucleic acid on the substrate and a detectable target polymer;

~~collecting pixel data of the nucleic acid array; and~~

~~generating an average intensity for a localized area.~~

Claim 145 (canceled)

Claim 146 (canceled)

Claim 147 (canceled)

Claim 148 (canceled)

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Claim 149 (currently amended): The system of Claim 144 wherein the target ~~polymer~~ is a nucleic acid.

Claim 150 (currently amended): The system of Claim 149 144 wherein the ~~solid~~ substrate has at least 400 ~~probe polymers~~ nucleic acids per  $\text{cm}^2$ .

Claim 151 (currently amended): The system of Claim ~~150~~ 144 wherein the solid substrate has at least 1000 ~~probe polymers~~ nucleic acids per  $\text{cm}^2$ .

Claim 152 (currently amended): The system of Claim ~~151~~ 144 wherein the solid substrate has at least 10,000 ~~probe polymers~~ nucleic acids per  $\text{cm}^2$ .

Claim 153 (canceled)

Claim 154 (currently amended): The system of Claim 144 wherein the substrate is an impermeable substrate having at least 1000 ~~polymers~~ nucleic acids/ $\text{cm}^2$ .

Claim 155 (canceled)

Claim 156 (new): The computer program of claim 60 wherein the pixel data is from fluorescent intensity data.

Claim 157 (new): The computer software of claim 68 wherein the pixel data is from fluorescent intensity data.

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Claim 158 (new): The system of claim 76 wherein the pixel data is from fluorescent intensity data.

Claim 159 (new): The computer program of claim 79 wherein the intensity data is fluorescent intensity.

Claim 160 (new): The computer software of claim 87 wherein the pixel data is from fluorescent intensity data.

Claim 161 (new): The computer software of claim 120 wherein the pixel data is from fluorescent intensity data.

Claim 162 (new): The computer program of claim 132 wherein the pixel data is from fluorescent intensity data.